

MARINA FUELING FACILITY INSPECTIONS in NORTHERN CALIFORNIA and the JANUARY 1999 MARINA ADVISORY PANEL

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Technical Symposium: Marina Fueling System
Design, Construction, and Operation

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INTRODUCTION

- Marina Facility Inspections
- Reporting My Findings
- Marina Advisory Panel

MARINA FACILITY INSPECTIONS

(late 1980s – early 1990s)

- **PURPOSE:** To Determine Compliance with Waste Discharge Requirements

“THE DISCHARGE OF PETROLEUM PRODUCTS TO GROUNDWATER, SURFACE WATER OR SURFACE WATER DRAINAGE COURSES IS PROHIBITED”

- **SHASTA LAKE** (Shasta County): 11 marinas
- **LAKE OROVILLE** (Butte County): 2 marinas

MARINA FUEL STORAGE AND PIPING INSPECTION FORM (Summer 2001)



- SHASTA COUNTY (12 marinas)

Shasta Lake, Whiskeytown Lake

- TEHAMA COUNTY (1 marina)

Black Butte Lake

- BUTTE COUNTY (2 marinas)

Lake Oroville

- PLUMAS COUNTY (7 marinas)

Lake Almanor, Bucks Lake

METHODS OF PETROLEUM STORAGE

UNDERGROUND TANKS



Double-wall tanks or
Lined single-wall tanks?

ABOVEGROUND TANKS (LAND-BASED)



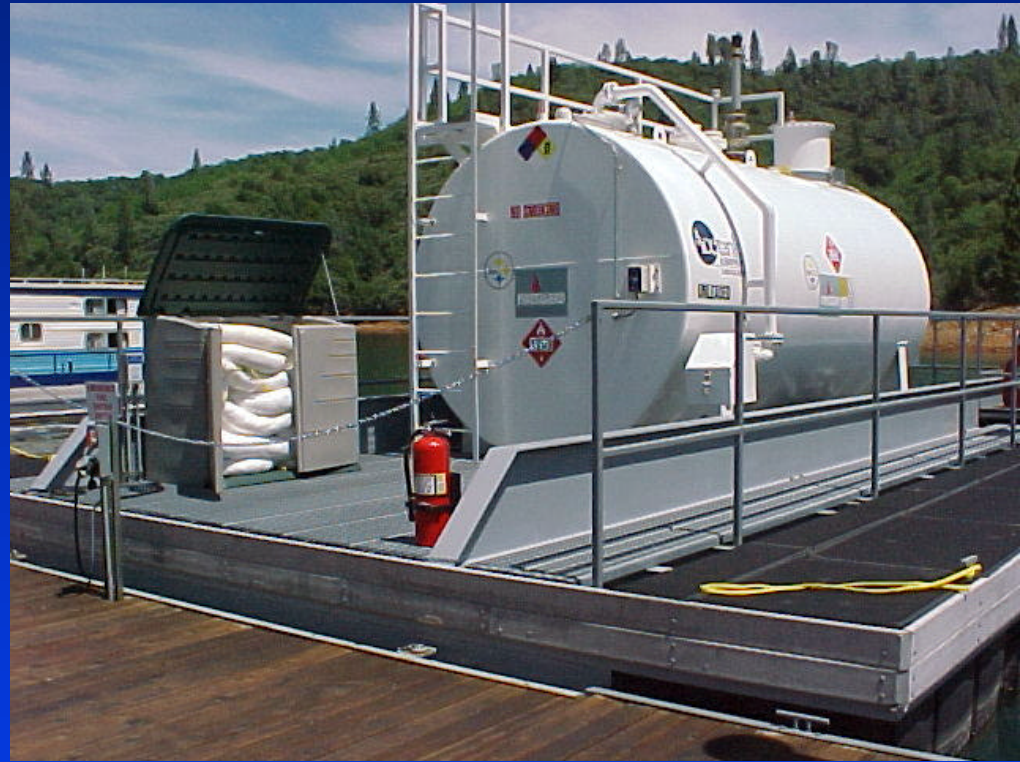
Tank secondary containment?

ABOVEGROUND FLOATING ON THE WATER : BARGE TYPE



CORROSION,
CATASTROPHIC FAILURE,
PROCEDURE FOR FUELING THE BARGE?

ABOVEGROUND FLOATING TANKS ABOVE THE WATER: ON FLOTATION



STABILITY, CATASTROPHIC FAILURE,
PROCEDURE FOR FUELING THE BARGE?

TYPES OF PIPING OBSERVED

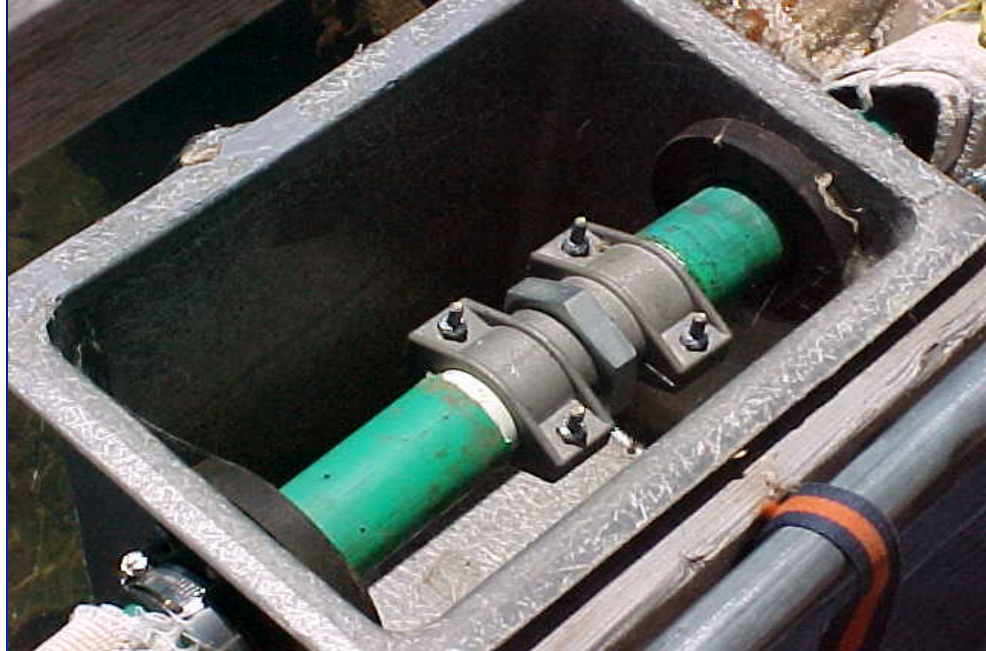
- Rigid Metallic
 - Single-wall
 - Galvanized
- Flexible Non-metallic
 - Double-wall
 - Commonly used underground at gasoline stations
- Rubber Hose
 - Single-wall

HOW LONG DOES IT TAKE FOR GALVANIZED STEEL PIPE TO CORRODE IN FRESH WATER?

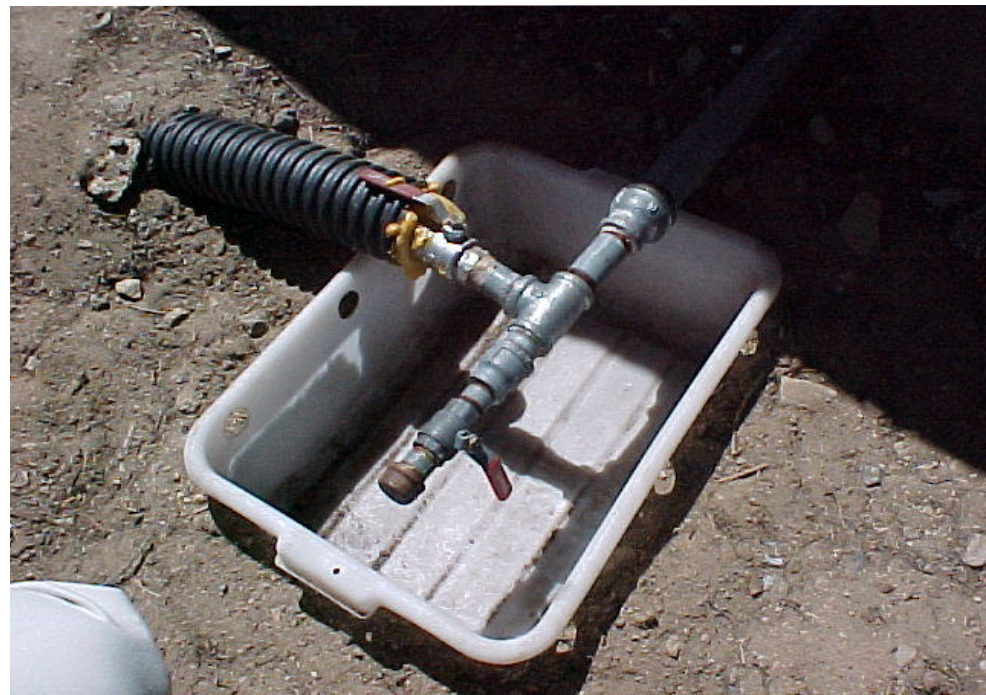
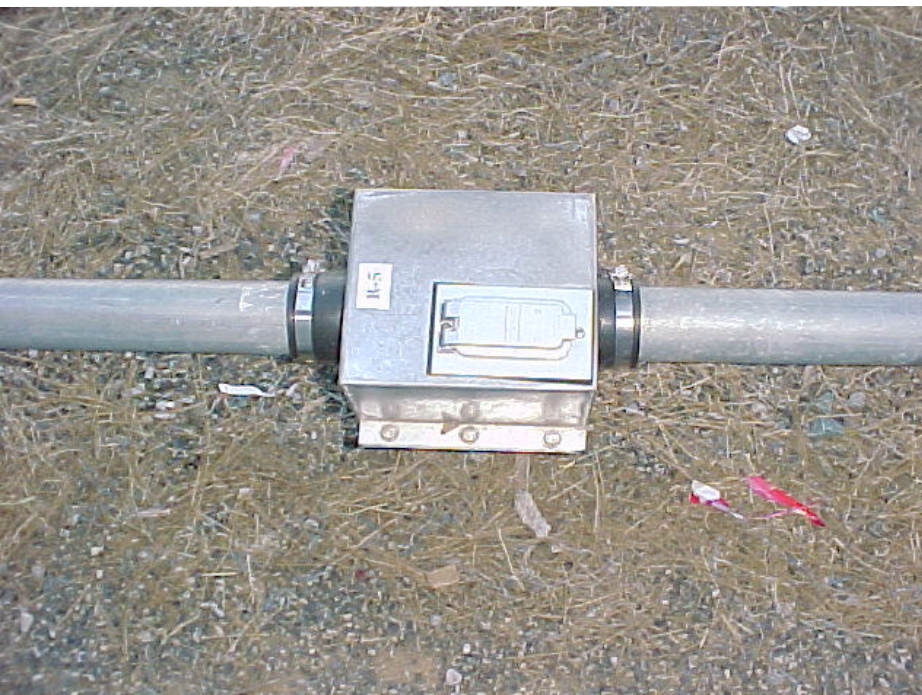


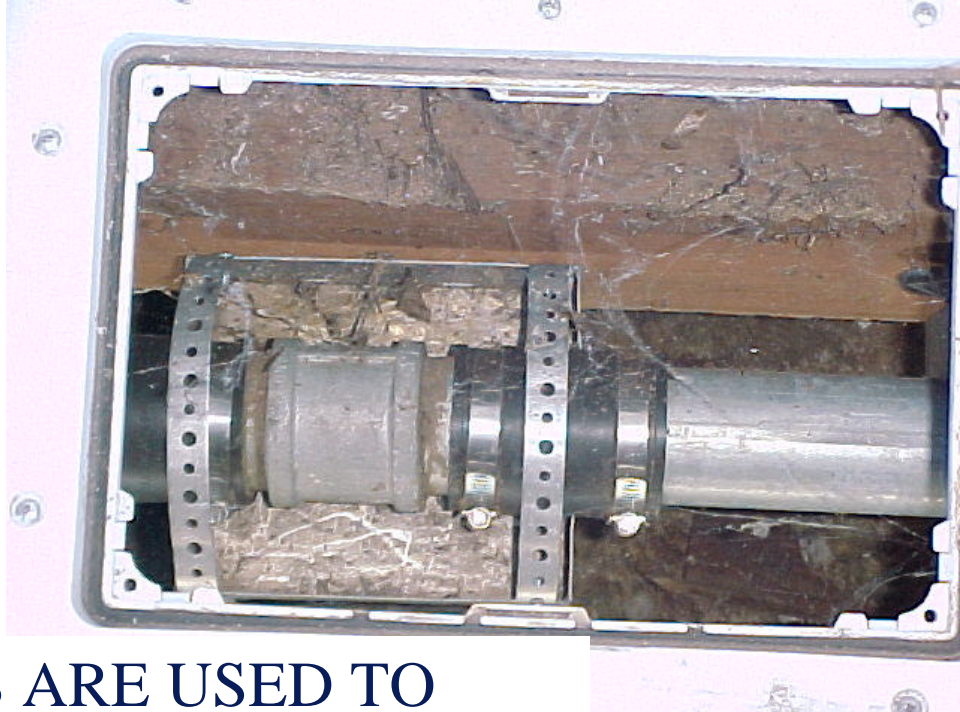
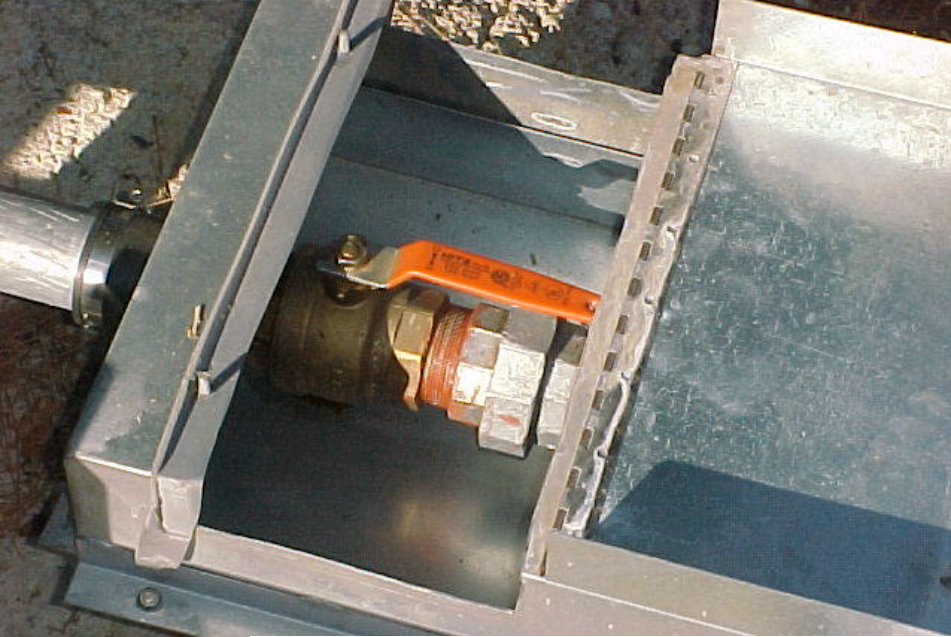
HOW TO PREVENT OR CONTROL PIPE CONNECTION LEAKS?



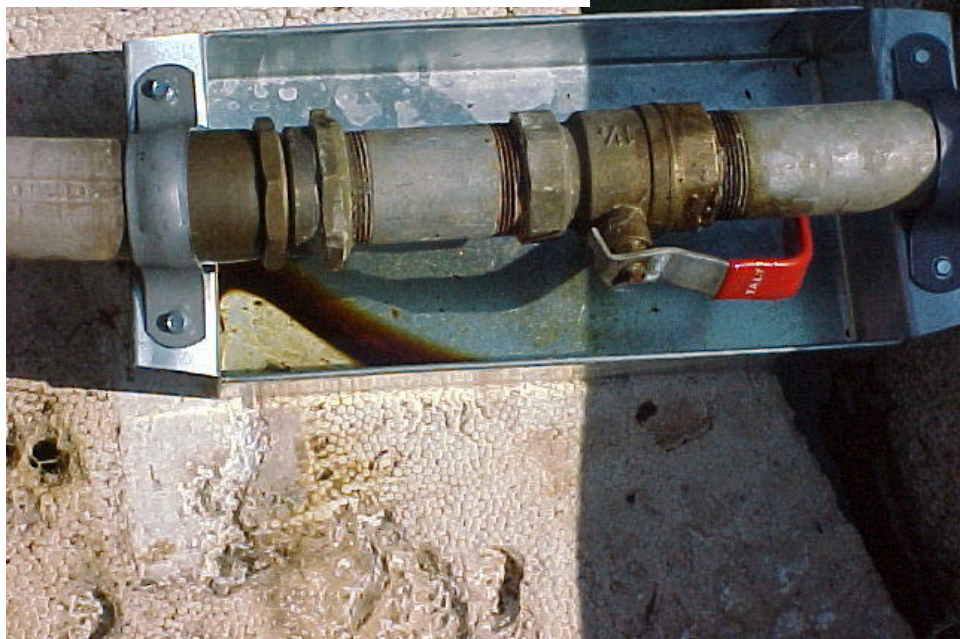


ARE CONTAINMENT BOXES THE BEST SOLUTION?





WHAT MATERIALS ARE USED TO
CONSTRUCT THE CONTAINMENT BOXES?



DO THEY PROTECT THE ENVIRONMENT?



**WILL FLEXIBLE
NON-METALLIC PIPING
ENDURE VARYING
ENVIRONMENTAL
CONDITIONS?**



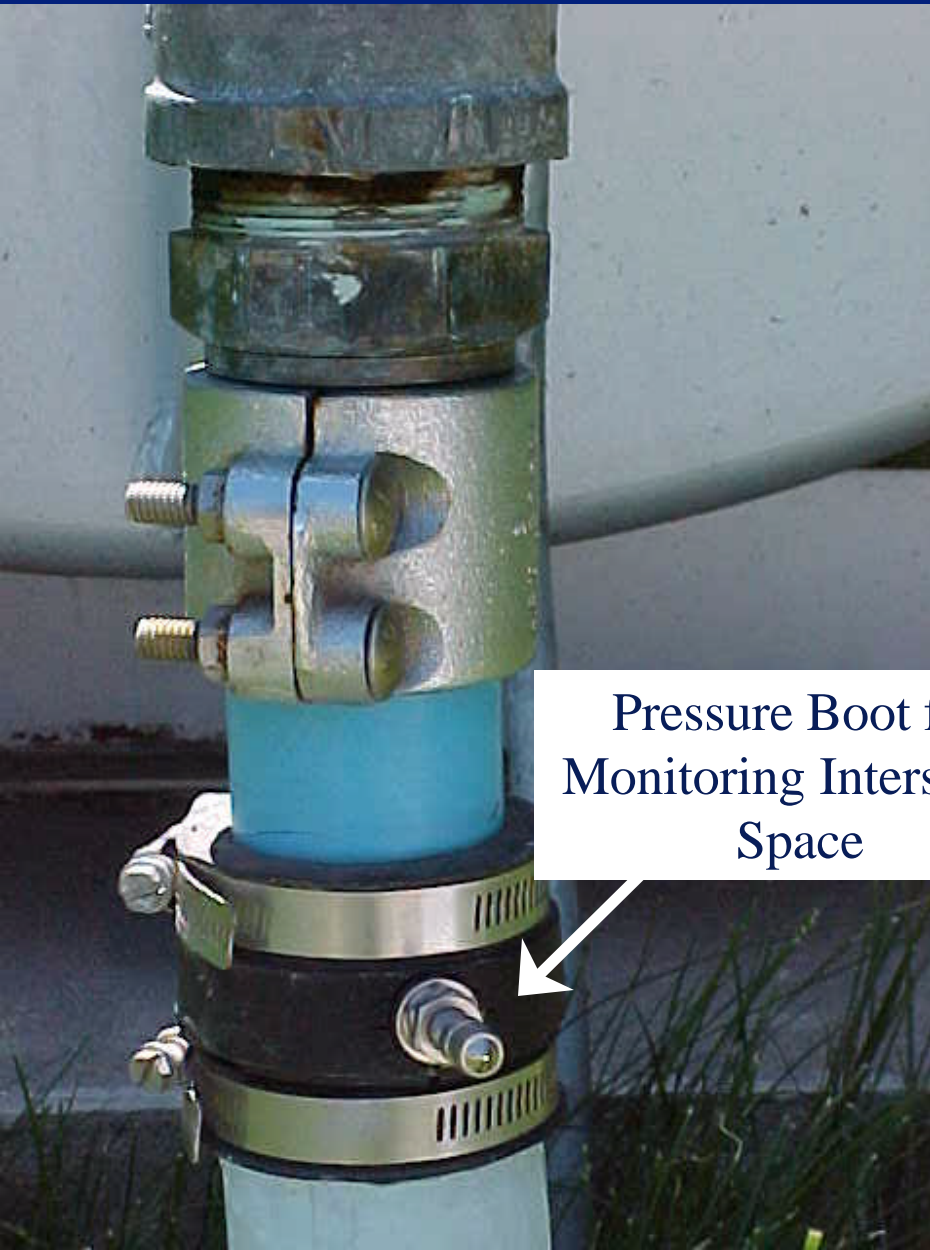
**TEMPERATURE CHANGES,
ABRASION,
SUNLIGHT**



**CAN FLEXIBLE NON-METALLIC PIPING
BE PROPERLY INSTALLED
ABOVEGROUND, OVER-WATER, UNDER WATER?**



LEAK DETECTION MONITORING



Pressure Boot for
Monitoring Interstitial
Space



LEAK DETECTION MONITORING FOR UNDERWATER PIPING?





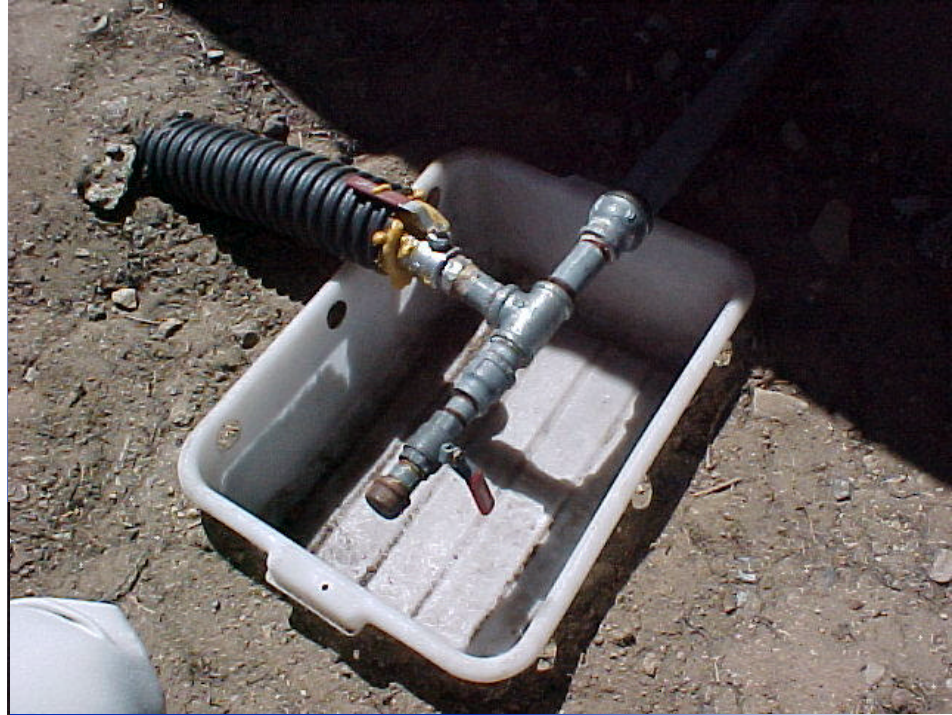
RUBBER HOSE: PERMEABILITY? SECONDARY CONTAINMENT?



ARE ALTERNATIVE
SECONDARY CONTAINMENT
MATERIALS APPROPRIATE?



DRAIN PIPE



FUEL DISPENSERS

- PUMPS FOR GRAVITY-FEED SYSTEMS
- LAND-BASED DISPENSERS
- OVER-WATER DISPENSERS
 - HOSE REELS
 - DISPENSER CONTAINMENT
 - FILTERS



Dispenser

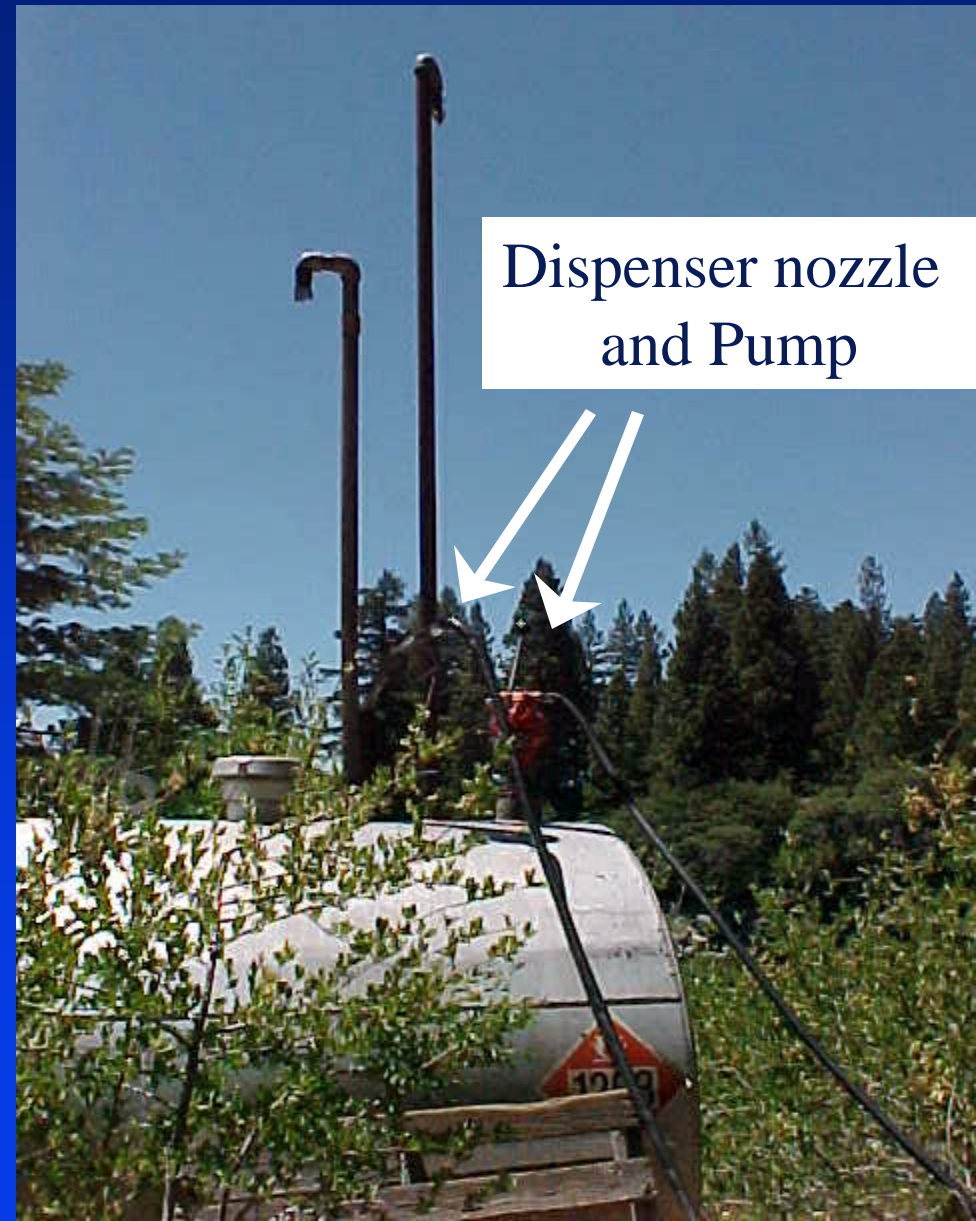


LAND-BASED DISPENSERS USED FOR GRAVITY FEED TANKS



Dispenser

LAND-BASED NON-RETAIL FUEL DISPENSING



ARE DISPENSER CONTAINMENT MATERIALS APPROPRIATE FOR THE ENVIRONMENTAL CONDITIONS?



No Containment



Leaking Metal Pan



Exterior Fuel Filter



ARE HOSE REELS
FOR OVER-WATER
DISPENSERS
NECESSARY?



REPORTING MY FINDINGS

(early 1990s)

- Aboveground Storage Tank
State/Regional Board Roundtable
- Underground Storage Tank
State/Regional Board Roundtable
- California Air Resources Board Staff Meeting

MARINA ADVISORY PANEL

(late 1990s)

- Executive Order: Governor Pete Wilson (October 8, 1997)
- “To Evaluate Refueling Practices at Marinas Located on Surface Water Bodies Serving as Drinking Water Sources, and Identify if any Further Upgrades Should be Made to Eliminate Releases to the Water Body.”
- Twenty members: Representing Industry(6), Government (9), and Water Agencies(5)

MARINA ADVISORY PANEL TEAMS

- FUEL STORAGE AND TRANSFER SYSTEMS
(11 members)
- FLOATING FUEL AND CONTAINMENT SYSTEMS
(6 members)
- VESSEL FUELING (6 members)
- VESSEL EMISSIONS (7 members)
- JANUARY 1999 REPORT:
<http://www.swrcb.ca.gov/cwphome/ust/docs/>

VESSEL EMISSIONS TEAM RECOMMENDATIONS

- Promote management practices for reducing emissions in the MTBE Management Practices Guide
- Encourage reservoir owners to establish a water quality goal for MTBE
- Ensure that adequate research is undertaken to investigate the multi-media fate and transport of any new oxygenates or reformulated gasoline components

VESSEL FUELING TEAM RECOMMENDATIONS

- The SWRCB should consult with the California Air Resources Board regarding gasoline exposure and the use of hold-open latches
- The SWRCB should consult with the National Marina Manufacturing Association and U.S. Coast Guard regarding possible statutory requirements for vessel fuel/air separator systems
- The California Legislature should provide financial incentives to encourage research and development of marina fuel dispenser nozzles

VESSEL FUELING TEAM RECOMMENDATIONS

(Continued)

- The SWRCB should contact the California Integrated Waste Management Board and recommend they increase their grant program for bilge pump-out systems
- The SWRCB should encourage development of a clearinghouse for gathering educational materials and distributing them to marinas

FLOATING FUEL AND CONTAINMENT SYSTEMS

TEAM RECOMMENDATIONS

- The SWRCB should develop regulations which provide consistency and adequate spill and fire prevention for California's waterways. These regulations should, as a minimum, incorporate:
 - ◆ Secondary containment for entire tank capacity
 - ◆ An overfill prevention device
 - ◆ A spill prevention system for the tank
 - ◆ Positive protection against siphoning fuel from the tank
 - ◆ The system must be capable of withstanding the worst weather conditions
 - ◆ The system must be capable of withstanding a collision from a boat
 - ◆ A leak detection system

FLOATING FUEL AND CONTAINMENT SYSTEMS

TEAM RECOMMENDATIONS

(Continued)

- The SWRCB should complete the team's analysis of state vessel laws and regulations
- California professional engineers should be required to certify that the design complies with the regulations and the system was constructed to the standards of design
- A thorough analysis of existing and proposed systems should be undertaken to insure that new regulations address the widest variety of systems
- The SWRCB should engage in discussions with third party entities to pursue certification for floating fuel systems

FUEL STORAGE AND TRANSFER SYSTEMS TEAM RECOMMENDATIONS

- The SWRCB should complete the team's analysis of existing statutes and regulations
- The Underground and Aboveground Petroleum statutory and regulatory requirements for marina piping should be consistent and designed specifically for marinas
- The SWRCB should meet with Independent Third Party Testing Organizations, Product Manufacturers, Marina Industry Representatives, and Design Professionals to develop appropriate standards for fuel transfer systems specific to marina requirements

FUEL STORAGE AND TRANSFER SYSTEMS TEAM RECOMMENDATIONS (Continued)

- The California Legislature should provide financial incentives to encourage research and development of new products specifically designed for marina fuel transfer systems
- The California Legislature should evaluate the feasibility of State grants or low interest loans to assist marina operators in implementing more stringent standards

SUMMARY

- Each marina fuel facility has a unique design, the environmental conditions in which they operate are variable, and the threat of petroleum releases to surface waters is high
- In 1999, the Marina Advisory Panel made recommendations for upgrading fueling systems at marinas:
 - ◆ The SWRCB complete work started by the Advisory Panel
 - ◆ The SWRCB consult with other Agencies and Independent Third Party Testing Organizations to develop appropriate standards for marina fuel facilities
 - ◆ The statutory and regulatory requirements for underground and aboveground petroleum storage at marinas should be consistent and specifically developed for the industry